

CLAIMS

What is claimed is:

1. A data storage disk having an error correction code (ECC) block stored on said disk, said ECC block comprising:
 - 5 an array of 104 rows and 182 columns of bytes, each row including ten bytes of inner parity and each column including sixteen bytes of outer parity.
2. The data storage disk of Claim 1, wherein said array includes row codewords being RS(182,172,11) and column codewords being RS(104,88,17).
- 10 3. The data storage disk of Claim 1, wherein said array is divided into eight sectors, each sector having thirteen rows.
4. The data storage disk of Claim 3, wherein each sector comprises eleven rows of data and two rows of outer parity, each row having ten bytes of inner parity.
- 15 5. The data storage disk of Claim 3, wherein each sector comprises:
 - a four byte identification data (ID) field;
 - a two byte ID error detection code field;
 - 20 a two byte system information field;
 - a 1880 byte user data field; and
 - a four byte error detection code field.
6. The data storage disk of Claim 1, wherein said data storage disk is a first-surface media.
- 25 7. An error correction coding method, said method comprising:
 - forming eight consecutive data frames, each data frame arranged in an array of eleven rows of bytes, wherein said eight consecutive data frames
 - 30 comprises 88 rows by 172 columns;
 - generating sixteen bytes of outer parity code associated with each of said 172 columns and adding said sixteen bytes of outer parity code to each of said 172

columns to form sixteen rows of outer parity code, wherein two rows of said outer parity code are associated with each of said eight consecutive data frames, such that said eight consecutive data frames comprises 104 rows by 172 columns;

5 generating ten bytes of inner parity code associated with each of said 104 rows and adding said ten bytes of inner parity code to each of said 104 rows, such that said eight consecutive data frames comprises 104 rows by 182 columns.

8. The error correction coding method of Claim 7, wherein forming eight consecutive data frames comprises:

- 10 generating an identification data (ID) for each data frame;
- generating an ID error detection code for each ID;
- generating an error detection code for each data frame;
- arranging each of said eight consecutive data frames to include said ID, said ID error detection code, user data, and said error detection code.

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9. The error correction coding method of Claim 7, wherein the two rows of said outer parity code associated with each of said eight consecutive data frames are appended to the associated data frame.

20 10. The error correction coding method of Claim 8, further comprising scrambling said user data in each data frame.

11. A data storage disk having an error correction code (ECC) block stored on said disk, said ECC block comprising:

25 an array divided into eight sectors, each sector having thirteen rows and a plurality of columns, wherein two of said thirteen rows are outer parity bytes.

12. The data storage disk of Claim 11, wherein each sector has 182 columns, ten columns of which are inner parity bytes.

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13. The data storage disk of Claim 11, wherein each sector comprises:
an identification data (ID) field;

an ID error detection code field;
a user data field; and
an error detection code field.

- 5 14. The data storage disk of Claim 13, wherein said ID field is four bytes, said ID error detection code field is two bytes, said user data field is 1880 bytes, and said error detection field is four bytes, said sector further comprising a two byte system information field.
- 10 15. The data storage disk of Claim 11, wherein said data storage disk is a first-surface media.